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DIVISION 02 - SITE CONSTRUCTION

SECTION 02935

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06/04

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SECTION 02935

TREES, PLANTS, AND GROUND COVERS
06/04

NOTE: Delete, revise, or add to the text in this section to cover project requirements. Notes are for designer information and will not appear in the final project specification.

This section covers furnishing and planting trees, plants, ground cover, soil preparation, conditioning, and guying and staking plants as specified under Section 02315, "Excavation and Fill."

Drawings must indicate the names, size, quantity, location for planting, and designation.

PART 1 GENERAL

1.1 REFERENCES

NOTE: The following references should not be manually edited except to add new references. References not used in the text will automatically be deleted from this section of the project specification.

The publications listed below form a part of this section to the extent referenced:

AMERICAN NURSERY AND LANDSCAPE ASSOCIATION (ANLA)

ANLA Z60.1 (1996) Nursery Stock

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA C2 (2000) Lumber, Timbers, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes

ASTM INTERNATIONAL (ASTM)

ASTM D 1760 (2001) Standard Specification for Pressure Treatment of Timber Products

1.2 SUBMITTALS

NOTE: Review submittal description (SD) definitions in Section 01330, "Submittal Procedures," and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal description.

The following shall be submitted in accordance with Section 01330, "Submittal Procedures," in sufficient detail to show full compliance with the specification:

SD-01 Preconstruction Submittals

Written Notice of Plant Deliveries shall be submitted in accordance with the paragraph entitled, "Delivery, Storage and Handling."

SD-03 Product Data

Manufacturer's catalog data for the following materials shall be submitted:

Metal Edging
Plastic Edging
Antidesiccant
Burlap
Mulch

SD-04 Samples

10 pounds 4.5 kilograms of Mulch shall be submitted for inspection and approval prior to application on site.

SD-10 Operation and Maintenance Data

Prior to the end of the contract maintenance period, copies of written instructions for year-round maintenance and care of the following items shall be submitted:

Installed Trees
Installed Plants
Installed Ground Cover

1.3 QUALITY ASSURANCE

During the guarantee period, plants that die or are in an unhealthy, unsightly, or badly impaired condition shall be replaced as soon as is reasonably possible after the unsatisfactory condition has become evident. No replacements shall be made in any season definitely unfavorable for planting. At the conclusion of the guarantee period, an inspection shall be conducted to determine the condition of plants. Plants not in a healthy growing condition will be noted. As soon as seasonal conditions permit, plants noted to be unhealthy, unsightly, or damaged shall be removed from

the site and replaced with healthy plants of the same kinds and sizes as originally specified. Such replacements shall be made in the same manner as the original planting at no extra cost to the Government.

1.4 DELIVERY, STORAGE AND HANDLING

Written Notice of Plant Deliveries, in advance, shall be submitted when the plant material is to be delivered and shall indicate the manner of shipment. Contractor shall furnish an itemized list, in duplicate, of the actual quantity of plant material in each delivery. List shall include the pertinent data as indicated. This list and the necessary inspection certificates to accompany each plant or shipment shall be delivered to the Contracting Officer prior to acceptance and planting of the plant material.

1.4.1 Packing and Shipping

Plants shall be protected during delivery to prevent damage or desiccation of leaves. Trees shall be protected during transport by tying in the branches and covering exposed branches.

Material other than trees, plants, and ground cover shall be delivered to the site in the original, unopened containers bearing the manufacturer's chemical analysis, name, and trade name or trademark. In lieu of containers, material may be furnished in bulk, and a certificate indicating the above information shall accompany each delivery.

Pesticide material, including soil fumigants, shall be delivered to the site in the original unopened containers. Containers that do not have a legible appropriate label will be rejected.

1.4.2 Storage and Protection

Plants and materials not installed or used on the day of arrival at the site shall be stored and protected as follows:

Outside storage shall be shaded and protected from the wind.

Bare root plants shall be heeled-in.

Plants, including those in containers, shall be kept in a moist condition until planted.

Lime and fertilizer shall be kept in dry storage away from contaminants.

Soil sterilant shall be stored remote from other landscape materials.

PART 2 PRODUCTS

2.1 MATERIAL

Plant material furnished shall be nursery grown, well-branched and proportioned, particularly with respect to the width/height relationship, and shall have a fibrous root system. Plants may be inspected at the place of growth, but such inspection shall not preclude the right of rejection at the site.

2.1.1 Plants

NOTE: Plants must be named on drawings.

Scientific and common names of plants indicated shall conform to the approved names given in the ANLA Z60.1 "American Standard for Nursery Stock."

Plants of kinds other than those named in the plant list will not be accepted unless specifically approved in writing. Proposed substitutes in each case must possess the same essential characteristics as the kind of plant actually specified in regard to appearance, ultimate height, shape, habit of growth, and general soil and other requirements. In no case shall the average value and quality of substituted plants be less than the value and quality of plants actually specified. Plants of greater value and quality may be accepted without additional cost to the Government.

2.1.1.1 Designation

NOTE: Balled and burlapped plants must be designated "BB" on the drawings.

Balled and burlapped plants designated "BB" shall be adequately balled as specified in ANLA Z60.1. Balls shall be firmly wrapped with burlap or other approved cloth. No balled plant will be acceptable if the ball is cracked or broken or if the stem is loose in the ball, either before or during the process of planting. If all other requirements are met, container-grown plants may be furnished in lieu of balled and burlapped plants.

NOTE: Container-grown plants must be designated "C" on the drawings.

Container-grown plants designated "C" shall have been grown in pots, cans, tubs, or boxes for a minimum of 6 months and a maximum of 2 years. Plants shall have sufficient roots to hold earth intact, without being rootbound, after removal from containers.

NOTE: Bare-root plants must be designated "BR" on the drawings.

Bare-root plants designated "BR" shall be dug with the root system substantially intact but with the earth carefully removed. Roots shall be covered with a thick coating of mud by "puddling" after the plants are dug. If all other requirements are met, balled and burlapped plants may be furnished in lieu of bare-root plants.

Plant designated "collected" shall be obtained from native stands or established plantings. To be acceptable, collected plants shall have been growing in favorable locations in a subgrade that ensures good fibrous root development and a vigorous growing condition. Minimum root spread for collected plant materials obtained bare-root shall be one-third greater than the minimum root spread of bare-root nursery-grown stock; minimum ball sizes for collected plant materials obtained balled and burlapped shall be

the next larger ball size than for nursery-grown stock in accordance with ANLA Z60.1.

Plantation-grown stock shall conform to ANLA Z60.1.

2.1.2 Burlap

Burlap shall be made of jute and shall weigh not less than 7.2 ounces per square yard 244.1 grams per square meter. Substitute cloth shall possess an equal strength and resistance to tearing.

2.1.3 Commercial Fertilizer

Commercial fertilizer shall be in accordance with the recommendations of the American Association of Nurserymen, uniform in composition, and delivered to the site in unopened original containers, each fully labeled, conforming to the applicable laws and bearing the trade name or trademark and warranty of the producer.

2.1.4 Mulch

Mulch shall consist of forest litter, sawdust, hay, straw, or other collected organic material. Mulches shall not contain sticks larger than 1/4 inch 6 millimeter in diameter, stones, clay, or other foreign material that will prevent the eventual decay of the mulch. Mulch that is harvested with farm equipment shall not be used within 48 hours after the mulching material has been cut. Forest-litter mulch shall consist of not less than 50-percent decomposed leaf litter, including 1/2 to 1 inch 13 to 26 millimeter of the soil lying under the leaves or occurring in the natural woodland location of the leaves. When sawdust mulch is used, 7.5 pounds 4.4 kilogram of ammonium sulfate or the equivalent shall be uniformly added to each cubic yard meter of sawdust.

2.1.5 Peat

Peat shall be a natural product of either sphagnum moss, reed, or sedge peat taken from a fresh water site. Peat shall be free from lumps, roots, and stones or other foreign matter and of such physical condition that the peat can be passed through a 1/2-inch 12.5 millimeter screen and be readily incorporated with the top soil. Peat shall have been conditioned in storage piles after excavation for at least 6 months, including one freezing and thawing period. Peat shall contain not less than 90-percent organic matter by weight as determined by loss on ignition on an oven-dry basis.

2.1.6 Topsoil

Topsoil blend shall be in accordance with Section [02311, "Excavating, Backfilling, and Compacting for Structures."] [02312, "Excavation, Backfilling, and Compacting for Utilities."] [02920, "Lawns and Grasses."]

2.1.7 Trunk-Wrapping Material

Tree wrap shall be two thicknesses of crinkled paper cemented together with a layer of bituminous material. Wrapping material shall be a minimum of 4 inches 102 millimeter in width and have a stretch factor of 33-1/3 percent. Twine for tying shall be a lightly-tarred, medium or coarse sisal yarn.

2.1.1.8 Guying and Staking Material

Guying wire shall be annealed galvanized steel.

Stakes for tree support shall be rough sawn wood free from defects that impair the strength. Standard stakes shall be a minimum of 2 by 2 inches or 2-1/2 inches 50 by 50 millimeter or 65 millimeter in diameter by the length required, pointed at one end. Ground stakes shall be a minimum of 2 by 2 inches by 3-feet 50 by 50 millimeter by 1 meter long, pointed at one end.

2.1.1.9 Edging Material

Wood edging shall be treated in accordance with ASTM D 1760 and AWPA C2 with CCA Type C, ACA, or pentachlorophenol preservative before installation. Wood treated with pentachlorophenol shall be free of solvent at the time of delivery. Creosote shall not be used. Anchoring stakes shall be of the same material as the edging.

Metal Edging shall be galvanized steel or aluminum with slots provided for stakes. Steel edging shall be treated with a rust preventative and factory-finished in green. Anchoring stakes shall be of similar material 16 to 18 inches 406 to 457 millimeter long and tapered.

Plastic Edging shall be 4-5/8-inches deep by 5/32-inch thick in 20-foot lengths 117 millimeter deep by 4 millimeter thick in 6 meter lengths for standard edging and 4-5/8-inches deep by 1/4-inch thick in 15-foot lengths 117 millimeter deep by 7 millimeter in 4-1/2 meter lengths for heavy-duty edging. Color shall be green.

2.1.1.10 Water

Water shall contain no elements toxic to plant life, and if not readily available at the jobsite, shall be transported to the jobsite by a means approved by the Contracting Officer.

2.1.1.11 Antidesiccant

Antidesiccant shall be an emulsion that will provide a film over plant surfaces permeable enough to permit transpiration.

2.1.1.12 Source Quality Control

2.1.1.12.1 Tests/Inspection

Quality and size of plants shall be in accordance with rules and grading by the ANLA Z60.1 and included in ANLA Z60.1. Plants shall have a normal habit of growth and shall be sound, healthy, vigorous, and free from disease and insect infestations. Trees shall have single straight trunks (unless this condition is a natural state). Any tree with a weak, thin trunk not capable of supporting itself when planted in the open will not be accepted. Plants larger in size than specified may be used, with approval, at no additional cost to the Government. If the use of larger plants is approved, the ball of earth and spread of roots shall be increased in accordance with ANLA Z60.1.

PART 3 EXECUTION

3.1 EXAMINATION

3.1.1 Verification of Condition

Actual planting shall be performed during periods when weather and soil conditions are suitable and in accordance with locally accepted practices (i.e. local planting season). Deviation from these requirements will be permitted only when approved in writing by the Contracting Officer.

3.2 PREPARATION

3.2.1 Protection of Planting Areas

Before excavations are made, precautionary measures shall be taken to protect existing vegetation during planting operations.

3.2.2 Surface Preparation

Locations for plants and outlines of areas to be planted shall be marked on the ground and approved before excavation is made. Shrubs shall be planted not less than 36 inches 1 meter from a building unless specifically designated.

3.2.2.1 Excavation

Excavation for planting shall include stripping and stacking all acceptable topsoil encountered within the areas to be excavated for trenches, plant pits, and planting beds. Excavation shall extend to the required subgrades indicated, but in no case less than specified. Plant pits shall be circular in outline or square if machine dug and shall have vertical sides and flat bottoms. Minimum depths of plant pits shall be measured from finished grade. Planting beds in which ground cover or similar plantings are required shall be excavated to the depth shown to eliminate objectionable weeds or grasses.

3.2.2.2 Pits

Diameter or minimum width of pits shall be at least 1 foot 1/3 meter greater than the diameter of the ball. Minimum depth of pits shall be 16 inches 400 millimeter measured from finished grade, and this depth shall be increased as necessary to accommodate the ball and a minimum of 6 inches 150 millimeter of compacted topsoil blend below the ball.

3.2.2.3 Excess Soil

Acceptable excess excavated topsoil shall be used to form saucers around plants, wasted uniformly over nearby low or rough lawn areas, or disposed as approved. Excess soils not required or not suitable for the above usage shall be disposed as directed.

3.3 INSTALLATION

Plants shall be planted in pits and at such levels that, after settlement, plants will bear the same relation to the finished grade of the surrounding ground as to the grade of the ground from which plants were dug. Plants shall be set plumb and rigidly braced in position until the soil has been tamped solidly around the ball. Plants shall be planted in approved

topsoil blend which shall be settled by watering and tamping. To compensate for shrinkage, the finished grade of the topsoil blend prior to watering shall be fixed at an elevation that is 10 percent of the fill depth higher than the desired finished grade. To facilitate watering, a shallow saucer approximately 3-inches 75 millimeter deep shall be formed around each plant by placing a ridge of topsoil blend around the edge of each filled-in pit.

**NOTE: The following paragraph describes the setting
of balled and burlapped plants.**

Balled and burlapped (BB) plants shall be placed on a minimum of 6 inches 150 millimeter of compacted topsoil blend that has been hand-tamped prior to placing plants. Plants shall then be placed in the plant pit and the topsoil blend tamped to fill all voids under the base and around the ball to a height of one-half the depth of the ball. Cloth, ropes, wires, and other wrapping material shall be cut away from the top half of the ball, and backfilling shall be completed. In no case shall cloth be pulled out from under the ball.

**NOTE: The following paragraph describes setting
container plants.**

Containers shall be opened and the plants carefully removed so that the earth around the roots of the plants remains unbroken. Plants shall be placed on a minimum of 6 inches 150 millimeter of compacted topsoil blend that has been hand-tamped prior to placing plants. Plants shall be placed in the plant pit and the topsoil blend tamped to fill all voids under the base and around the ball to the full depth of the ball.

**NOTE: The following paragraph describes the setting
of bare-root plants.**

Bare-root stock shall be planted so that the roots are arranged in a natural position. Damaged roots shall be removed with a clean cut. Cuts larger than 1/2 inch 13 millimeter in diameter shall be painted with tree-wound dressing. Topsoil shall be carefully worked in among the roots. The remainder of the backfill shall be tamped and watered. Earth saucers shall then be formed around isolated plants.

3.4 APPLICATION

3.4.1 Pruning

Pruning shall be limited to the minimum necessary to remove injured twigs and branches and to compensate for the loss of roots during transplanting, but must never exceed one-half of the branching structure. With approval, pruning may be done before the delivery of plants but not before plants have been inspected and approved. Cuts shall be made flush, leaving no stubs. Cuts over 3/4 inch 20 millimeter in diameter shall be painted with an approved tree-wound paint. To further aid in the recovery of transplanted trees, the leaves may be stripped prior to shipment where this is a locally accepted practice and approved. Evergreens shall not be

pruned except to remove injured branches. [Palms may be pruned with a "hurricane cut" to minimize damage during transportation and planting.]

3.4.2 Mulching

Within 2 calendar days after planting, plants shall be mulched with a layer of mulch material covering the entire saucer area around each plant to a depth of 2 to 3 inches 50 to 75 millimeter. Peat used as the mulch material shall be saturated and incorporated into the top 2 inches 50 millimeter of the soil.

3.4.3 Watering

During the planting period, and for [2] [_____] weeks thereafter, plants shall be watered by the Contractor in accordance with the needs of the species, and as required by the individual plant.

3.5 SCHEDULES

Maintenance operations for Installed Trees, Installed Plants and Installed Ground Cover shall begin immediately after planting and shall continue as required until final acceptance. Plants shall be kept in a healthy, growing condition by necessary maintenance. Plants shall be inspected at least once per week and needed maintenance performed promptly.

-- End of Section --